in the number of petitions to deny (and a concomitant delay in the initiation of service) can be expected.

Finally, as a matter of policy the adoption of interference prediction methodologies is best considered in the context of a notice and comment rulemaking proceeding. Such a proceeding provides an opportunity for the entire industry, and not just the parties to an application dispute, to evaluate and comment upon the efficacy of any proposed methodology, resulting in more informed decisionmaking by the Commission. This very proceeding has lead to a long, healthy debate within the wireless cable industry and ITFS community regarding the methodology first proposed in the Petition, and has led the Petitioners to propose improvements in the methodology. Suffice it to say that the improvements in the methodology, and the widespread support for the approach that is now being advanced, would not likely have occurred had the debate been limited to the contestants in a battle over a single response station hub authorization. Rather, as the Commission has recognized in similar contexts, this sort of debate is best conducted in the context of a rulemaking proceeding.[161/]

4. The Commission Should Reject EDX's Proposed Revisions To The Approach For Predicting Interference From Response Stations.

As the Petitioners discussed briefly in their Comments,[162/] in early-filed comments EDX, a software vendor, objected to the methodology proposed by the Petitioners for predicting interference from response stations, contending that the proposed approach is "unnecessarily complicated and

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[161/] *See, e.g., PCS Second Report and Order*, 8 FCC Rcd at 7757-73 (mandating use for determining interference from PCS to incumbent 2 GHz licensees of either the specific methodology incorporated into rules or the then-anticipated EIA/TIA Bulletin TSB10-F); *PCS Reconsideration Order,* 9 FCC Rcd at 5029 (refusing to adopt TSB10-F as sole approach to interference predication absent an opportunity for public evaluation and comment).

[162/] *See* Petitioners Comments, at 60-62.

off the mark in terms of providing good estimates of potential interference."[163/] While EDX is to be applauded for its effort to simplify the proposed methodology for predicting interference, for the reasons set forth below and in the Petitioners Comments,[164/] the Petitioners cannot agree that the EDX proposal is superior. To the contrary, while the Petitioners readily concede that their approach is not simple, the complexities in that approach are inherent in developing an interference prediction methodology that is neither too restrictive (precluding new facilities that could otherwise be licensed), nor too liberal (risking potential interference to existing facilities). The methodology proposed in the Petition, particularly if improved in the manner discussed above (which responds to the only valid criticism advanced by EDX)[165/], provides a far more accurate model of the potential for interference than the alternative proposed by EDX, and does so with the minimum of complexity necessary to achieve that objective. In its quest for simplicity, EDX has developed a model that is just too inaccurate for practical application.

[163/] EDX Comments, at 1.

[164/] *See id.*

[165/] EDX correctly noted that the proposed methodology did not establish a unique set of grid points which could be readily replicated by other engineers choosing to duplicate the interference analyses. *See* EDX Comments, at 4. In response, the Petitioners are now proposing to specify the set of grid points used in the analysis by latitude and longitude around the response service area ("RSA"). The set of grid points consequently can be specified uniquely by three pieces of information which, under the Petitioners' revised proposal, are required to be filed with the application: the coordinates of the response station hub, the spacing of the grid points in integer seconds of latitude and longitude, and the boundaries of the RSA.

a. The Primary Objection To The Methodology Expressed By EDX Is Misplaced.

Before turning to the substantial flaws in the counter-proposal advanced by EDX, the Commission should note that EDX's primary stated reason for objecting to the Petitioners' proposed methodology is misplaced. EDX contends that the Petitioners' proposed rules are flawed because, in practice, the areas served by a given response station hub will "almost never [be] uniform or contiguous" and thus it is impossible to define an RSA.[166/] Thus, EDX contends, "[i]t is easy to envision a circumstance in which the best RSA hub to serve a given home is not necessarily the closest because the closest hub is obstructed from the home by intervening hills, buildings or trees."[167/]

The Petitioners believe that EDX's views, apparently drawn from mobile cellular experiences, are inapplicable to a fixed service such as that contemplated here.[168/] More importantly, however, the fact that a given hub may not be able to communicate with every single point within its RSA and that a given response station may communicate with a hub that is not the closest is of absolutely no relevance under the rules proposed by the Petition.

[166/] EDX Comments, at 2. While EDX also objects to the methodology for establishing and designating grid points, as noted above that objection has been fully addressed by the changes in the methodology contained in Exhibit 1.

[167/] *Id.*

[168/] While EDX's conclusions may have some validity with respect to cellular systems where the response stations are hand-held or automobile-installed mobile units that are low to the ground and utilize very nondirectional antennas, the transceivers that will be used in connection with MDS/ITFS return paths will be quite different. Since response transmitters will be mounted atop buildings, often on masts extending above the rooftop, in most cases there will be direct line of sight to the nearest hub.

What EDX appears not to understand is that the rules proposed in the Petition were drafted with the understanding that not every location within an RSA will be able to communicate with the associated response station hub. Thus, under the proposed rules, it is possible for RSAs to overlap (and therefore for a given response station to communicate with a hub that may not necessarily be the closest).[169] It is important to remember that an RSA merely defines the area in which a response station hub licensee is entitled to install response stations. Establishment of an RSA is essential to the objective of interference management, for it identifies the geographic area from which potential interference may originate. By proposing overlapping RSAs, system operators will be able to assure that subscribers in areas where line-of-sight may be difficult to achieve can communicate with multiple response hubs, increasing the potential that the subscriber will have line-of-sight to at least one.[170]

b. The EDX Counterproposal Is Fundamentally Flawed.

Not only are EDX's concerns largely misplaced, but the counterproposal advanced by EDX under which the collection of response station transmitters in an RSA would be represented by a

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[169] By way of contrast, booster service areas are not permitted to overlap under proposed Sections 21.913(b)(5) and 74.985(b)(6). The reason for this distinction is simple -- The booster service area designates a protection zone, while the RSA does not specify an area of protection, but merely specifies the area in which response stations associated with a given hub can be installed. If booster service areas could overlap, it could become extremely difficult for a neighboring station to modify its facilities and protect service in the overlap area from interference to both boosters (*e.g.* if boosters with overlapping service areas employed differing polarizations, the benefits of cross-polarization would be lost to a neighboring licensee). However, there is no adverse impact on a neighbor if RSAs overlap, since it is the response station hubs, and not the response stations themselves, that are entitled to interference.

[170] Indeed, it is this overlapping of RSAs that will make possible one of the techniques previously cited by the Petitioners for resolving possible BDC overload — the reorientation of the offending transceiver towards another hub. *See* Petitioners Comments, at 99.

single, omnidirectional antenna located at the hub, is fundamentally flawed in numerous respects. Indeed, adoption of EDX's proposal would seriously compromise the ability of wireless cable operators and educators to deploy advanced technologies in a manner that reasonably avoids harmful interference.

First, adoption of EDX's proposal would result in substantial over-protection of existing facilities (making it substantially more difficult to secure response station hub authorizations) because an omnidirectional radiator at the hub does give appropriate consideration to the reduction in potential interference by a return path system resulting from blockage due to terrain variation throughout the RSA. By contrast, the methodology proposed by the Petitioners more accurately models the effects of terrain by locating the potential response transmitters at grid points dispersed strategically throughout the RSA. Then, the methodology requires use of the actual ground elevation and maximum antenna height at each grid point to determine the interference potential for a system. If a grid point is determined to be terrain blocked, this grid point can be eliminated from the analysis.

Terrain blockage will be an essential tool used in the protection of surrounding stations from response station interference, particularly where two plane polarized co-channel stations are closely spaced. At present, most closely-spaced co-channel downstream stations are cross-polarized to provide the necessary interference protection. Conversion of channels in one market to upstream transmissions will typically involve the use of alternating polarizations among sectors in order to achieve the isolation requirements at the hub. Therefore, a plane polarized condition will be created with the adjacent market. In such a scenario, careful engineering of the response station hub and designation of an RSA that takes into consideration terrain shielding may be the only means of isolating the two markets from interference.

The EDX proposal makes an effort to address this issue, including a power de-rating based on the height of the hub above average terrain and achieving some correlation in predicted received signal level when compared to multiple response transmitters in an RSA. However, EDX's approach is insufficient since the single source of radiation cannot be adjusted in height to accurately model the line-of-sight conditions at response station. EDX concedes that its approach does not model these effects, admitting that:

> Of course, the most dramatic difference in signal levels occurs in areas where the hub station is line-of-sight and no response stations are line-of-sight, or vice versa. Equivalent hub power adjustments alone cannot overcome this kind of difference since it is spatially dependent."[171/]

Given how important terrain blockage will likely be in designing many response station hubs and associated RSAs, EDX is asking the Commission to sacrifice the single most important design tool available to the engineering community on the alter of simplicity.

Second, EDX's approach is flawed by its failure to provide any mechanism for modeling the potential for interference from a non-circular RSA. The EDX proposal includes a formula (derived from a series of calculations based on circular RSAs of varying diameters) for calculating the ERP of the omnidirectional radiator at the hub center to model the aggregated power from all of the response transmitters throughout the RSA. However, EDX does not even address the situation where an RSA is not circular. What power adjustments need to made to accommodate different cell shapes? Where do you locate the radiator for irregularly shaped RSAs? These questions are not addressed at all by EDX.

[171/] EDX Comments, at 13.

That flaw is quite significant. While assuming that all RSAs will be circular certainly simplifies EDX's approach, in fact RSAs will not always be circular in shape.[172/] Indeed, it will often be the case that an applicant cannot specify a circular RSA, for under the proposed rules RSAs generally cannot extend outside of the PSA for the underlying station.[173/] Moreover, the flexibility to specify the size and shape of the RSA is a critical component to preventing interference -- under the Petitioners' approach an applicant can design its RSA in a non-circular fashion in order to avoid locating response stations where they may interfere with a neighbor. Once again, in its quest for simplicity EDX has proposed an approach that would deny system designers a critical tool for avoiding interference.

Third, the EDX proposal does not accurately model the potential for interference in those situations where response station transmitters are located in close proximity to an adjacent market receive site or PSA boundary. While the prior paragraphs have discussed scenarios under which the EDX approach is unduly conservative and would unnecessarily preclude the introduction of advanced technologies, here the EDX proposal threatens to permit the deployment of services that will actually cause interference. In cases where the edge of an RSA is in very close proximity to a receive site in an adjacent market, it is the radiation from the back side of the response station

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[172/] As a practical matter, RSA boundaries are likely to follow either the boundaries of geopolitical areas (BTAs, counties or zip codes) or the shape of the downstream antenna pattern (which will often be cardioid, peanut or some other irregular shape).

[173/] *See NPRM*, at C-11, C-31 (proposed Sections 21.909(c)(3)(ii) and 74.939(c)(3)(ii)). While PSAs for ITFS and incumbent MDS stations are circular, if a response station hub is located at a site other than the center of the circle when the location of the PSA was fixed, non-circular RSAs will have to be used to serve the PSA with response stations.

antenna that will be the most significant contributor to interference. However, the methodology that EDX is proposing does not even analyze this potential source of interference.

Fourth, the interference potential of systems designed so that response stations take turns sharing a given frequency could be significantly over- or under-estimated by the EDX model. A return path system where only one response transmitter in a sector is using a given frequency at a given time would be represented by the EDX model as an omni directional radiator at the hub center. In an actual system, for any individual sector only one transmitter would be operational at any given time. Thus, there should be no aggregation of power from multiple response stations within the sector. The only aggregation should be from each of the other sectors. For example, suppose a 4 MHz channel is to be used for return path transmissions and the channel is broken into two, 2 MHz subchannels. Assume a sectorization plan requiring 8 sectors and response transmitters that take turns using the subchannels. Therefore, the maximum number of transmitters which can be operating simultaneously in a sector is two. The maximum number of transmitters which can be operating simultaneously in the cell is 16.

At any given instant, within each sector transmitters could be operating on both subchannel frequencies either at the cell perimeter or close to the cell center. Depending on the differences in total elevation at different locations in the cell, the potential for interference could go from 0 (terrain blocked) to 100% (complete line-of-sight). Under the EDX proposal, if it happens that the terrain elevation at the hub center where the assumed omnidirectional radiator was located were low, the potential for interference would be completely missed. If, on the other hand, the terrain elevation were high, the potential for interference would be overly exaggerated.

By way of contrast, the methodology proposed by the Petitioners would again account for these variations by placing transmitters at the grid points and determining which of the grid points creates a worst case interference condition from the sector. Even though the interference condition is worst case, it still gives a more accurate indication of power and terrain variations in the calculations of potential interference.

Fifth, The EDX proposal does not address the fact that various types of response station transmit antennas and polarizations will be deployed by system designers to minimize the potential for interference. The formula proposed by EDX for calculating the power radiated at the omnidirectional hub antenna does not take into account these tools for reducing interference. As noted in Petitioners Comments, an accepted method for reducing response station interference will be to use more directional transmit antennas with reduced sidelobe radiation.[174/] Just as the EDX proposal does not recognize the potential for interference caused by radiation from the sides and back of response station transmit antennas located near the boundaries of neighboring systems, the formula proposed by EDX does not consider this valuable interference abatement tool. Similarly, the EDX proposal does not consider another important tool in the elimination of potential interference -- cross polarization.[175/] By contrast, the Petitioners' proposal recognizes that both polarization and antenna patterns play an important role in the mitigation of interference and allows system designers to consider both tools in the calculation of potential interference.

[174/] *See* Petitioners Comments, at 95-96,

[175/] *See id.* at 94.

Finally, the EDX proposal does not account for "hot spots" of potential interference due to areas of dense population. In the interest of simplicity, the EDX proposal assumes "... the response stations are uniformly distributed around the RSA hub..,"[176/] and ignores the very real potential for non-uniform population distribution, especially in larger RSAs where there are likely to be concentrations of population in small areas. These concentrated areas could become "hot spots" for potential interference to neighboring stations if too many response stations are concentrated in the area without appropriate adjustments to the interference analysis.

The methodology put forth by the Petitioners proposes to check the RSA for hot spots by using the zip code boundaries and determining if regions must be defined and analyzed within an RSA. If regions are required, appropriate limits will then be imposed upon the number of response stations that can operate simultaneously on any given frequency in any sector within the region. While the Petitioners recognize that their approach adds a level of complexity when interference analyses are first performed, they submit that the benefit of more accurate predictions of interference far outweighs the cost.

G. The Clarification Of The Emission Mask Requested By NextLevel Is Unnecessary.

In the *NPRM*, the Commission sought comment on the emission mask proposed in the Petition, whether it was sufficient to provide adequate adjacent channel interference protection, and "comment on the means for measuring compliance with the spectral mask requirements, including the appropriate resolution bandwidth(s)."[177/] In response, Next Level Systems, Inc. ("NextLevel")

[176/] EDX Comments, at 8.

[177/] *See NPRM*, at ¶¶ 19-23.

has called for clarification of and changes to the emission mask proposed in the *NPRM* (which is largely based on that adopted on an interim basis in the *Digital Declaratory Ruling*).[178/]

In their Comments, Petitioners suggested a clarification to the proposed rules that addresses both the questions posed by the Commission and the issues raised by NextLevel with respect to the confusion over the description of the emission mask in the *Digital Declaratory Ruling*, stemming from the familiarity of the industry with the measurement of such a mask in an analog environment, but not in the digital domain. The Petitioners' suggestion involved the use of a formula to relate the signal power to the required attenuation when using either of two measurement techniques.[179/] Use of a formula made the measurements independent of the resolution bandwidth employed so that determination of compliance with the emission mask could be made correctly with instruments having different characteristics and in cases in which different channel bandwidths were involved.

The clarification sought by NextLevel would result in shifting the emission mask by 17.78 dB from the mask used in all of the testing done in support of the Petition that led to the *Digital Declaratory Ruling* and upon which the currently proposed rules are based. Grant of that clarification would not be an acceptable outcome as it would result in increased interference from digital transmissions absent a corresponding reduction in the average power utilized. Nevertheless, Petitioners are sympathetic with NextLevel's concern that the measurement method needs to be explained more clearly, and also note that the proposed rule does result in somewhat tighter

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[178/] *See* NextLevel Comments at 3-7.

[179/] *See* Petitioners Comments, at 127-132.

constraints on transmitter performance, particularly with respect to the suppression of discrete spurious signals, than was hitherto required in analog operations.

As can be seen from the spectrum plots submitted with the original Petition for Declaratory Ruling that led to the *Digital Declaratory Ruling*, the method employed to establish the emission mask of the transmitters used in obtaining the data on permissible power levels measured both the average power of the signal and the extent of attenuation of the signal in specified locations with a single resolution bandwidth.[180/] Those measurements were taken using a spectrum analyzer that was set to a resolution bandwidth of 100 kHz, by employing the delta marker technique to show both the frequency and amplitude differences between two points in the output spectra of the transmitters. One point was set to the center frequency of the channel using the reference marker. The other points were measured by offsetting the delta marker in frequency by the required amount.

In the submitted spectrum plots, the reference marker can be seen in the middle of the channel, sitting just on top of the "flat top" of the signal that represents the average power level of the signal. Measurements at the channel edges were then set to be 38 dB below the level at the center of the channel, and measurements in the center of the adjacent channels were set to be 60 dB below that value. The flat top value found this way in the center of the channel did not equate to the full average power in the signal that would be encountered if the signal power had been measured with a device such as a bolometer or similar instrument that responds to the heating power of the signal. In fact, the true heating power would be 17.78 dB (6 MHz/100 kHz) higher than shown by the reference marker in the channel center. The result is that the attenuation required at each point

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[180/] *See* Petition for Declaratory Ruling, at Appendix B, "Report on Wireless Cable Interference Testing, April 27-May 4, 1995", at 50-55 (filed July 13, 1995).

specified for the emission mask is 17.78 dB greater than if it had been measured from the heating power of the signal, so long as a 100 kHz resolution bandwidth were always used.

While the method employed in the testing is different from that used in some services, as pointed out by NextLevel, it is in keeping with the approach used in the broadcasting services for many years. Since the ITFS and MDS services are essentially microwave broadcasting services, it is appropriate to use methods that are similar to those used in the broadcasting environment. In its recent *Sixth Report and Order* in the digital television proceedings,[181] the Commission originally specified the required attenuation at the channel edges to be 35 dB, but, noting that this was the correct value "based on the average power in a 500 kHz segment of the DTV channel," it subsequently modified the value to 46 dB "to correctly reference the total average power within a 6 MHz channel." Thus the Commission built the correction factor of 11 dB (6 MHz/500 kHz) into the value used to specify the attenuation required. In other words, the Commission retained the attenuation of 35 dB at the channel edge essentially as measured from the flat top of the signal (with the moderate difference caused by the inclusion of the pilot carrier).

If a similar approach were to be applied to the MDS and ITFS rules and a 100 kHz resolution bandwidth continued to be specified, the attenuation required at the channel edges and greater than 3 MHz away from the channel edges would have to be specified as a minimum of 56 dB and 78 dB, respectively. But then an entire series of such values would have to be specified to cover the various channel and subchannel bandwidths that will be relevant to the new channel structure. A different resolution bandwidth would also have to be selected for measurements of the 125 kHz channels

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[181] *See Advanced Television Systems and Their Impact Upon The Existing Television Broadcast Service*, 12 FCC Rcd 14,588, 14,676-77 (1997).

because, as explained in detail in Petitioners' Comments, the 100 kHz value will not yield correct results for those channels.[182/]

Furthermore, for the reasons explained in the Petitioners Comments, it is not desirable to limit measurement of the emission mask to just one value of resolution bandwidth. Different types of instruments may yield the most appropriate results using different values, and, as just noted, different channel or subchannel bandwidths will demand the use of different resolution bandwidths for their correct evaluation. Thus, Petitioners continue to believe that the most appropriate scheme for selection of the resolution bandwidth to be used is to leave the choice to the operator making the measurements, who can make the optimum selections for the type of instrument used and the channel characteristics. Then the formulas given in the Petitioners' Comments will provide the correction factors necessary to compensate for whatever combination of measurements is made.

In its Comments, NextLevel also requests that the emission mask be slightly relaxed near the channel edges so that the signal must be attenuated by at least 25 dB at the channel edge itself, then linearly sloping to at least 40 dB attenuation at 250 kHz above or below the nearest channel edge, and finally linearly sloping to at least 60 dB attenuation at 3 MHz above or below the nearest channel edge. This would have the effect of "chamfering the corners" of the emission mask that has been in use for digital transmission since the promulgation of the *Digital Declaratory Ruling.*

NextLevel correctly notes that the testing that supported the initial Petition for Declaratory Ruling used some equipment that essentially followed the mask proposed by NextLevel. However, the equipment used in that testing was prototype in nature and not specifically designed for

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[182/] *See* Petitioners Comments, at 128-29.

MDS/ITFS use. It was desired in the initial Petition to retain the attenuation values and the language describing them then current in the Rules pertaining to analog transmission so as to minimize the interpretation required by the Commission in issuing a declaratory ruling. Since the emission mask then proposed fell below the levels used in actual testing, any interference that occurred in real implementations would therefore be less than occurred in testing – a conservative outcome. It was felt that equipment ultimately would be built specifically for MDS/ITFS applications and that such equipment would follow the emission mask proposed, the practical achievement of which had been demonstrated.

In fact, some equipment in use in digital MDS/ITFS applications does meet the current emission mask. Other equipment that could be placed into service has been designed for other applications (such as conventional wired cable) and does not meet the emission mask currently in effect. When such equipment is used, it is necessary to apply additional filtering at considerable expense in order to comply. With relaxation of the emission mask to the extent suggested by NextLevel, it would be possible to use equipment designed for cable applications without the extra filtering, thereby gaining the advantage of the economies of scale that result from use of equipment that sees wider application without the additional expense of the supplementary filtering.

Since the testing done initially in fact shows that no harm will be done to receivers tuned to the adjacent channels, the place where the emission mask matters, Petitioners support the suggestion from NextLevel to slightly relax the emission mask to permit the use of equipment that is also intended for other applications. The form of modification proposed by NextLevel is appropriate.

It has been the intent of Petitioners throughout this proceeding to foster the most flexible use of the MDS/ITFS spectrum possible, consistent with providing the interference protections to

licensees which they are already afforded. Thus, the proposed rules provide for the division of channels into subchannels and the aggregation of channels into superchannels. In the case of superchannels, it is clear from the proposed Rules that the requirements of the emission mask must not be met at the edges of the licensed 6 MHz channels in the interior of such superchannels. The emission mask is treated as providing protection to licensees of adjacent channels not participating in the aggregation of the superchannels.

It is implicit in this approach, although not explicitly discussed in the Petition, that superchannels themselves can be divided into subchannels that span the edges of their constituent 6 MHz channels. Thus in the example given by NextLevel, it would be possible to assemble three 6 MHz channels into a single 18 MHz superchannel and then divide that superchannel into four 4.5 MHz channels. In this case, it is clear from the currently proposed Rules that the outer edges of the 18 MHz superchannel would have to meet the requirements of the emission mask, and the two internal edges of the 6 MHz channels would not have to do so. What may not be clear in this case is that it should be permissible to subdivide the 18 MHz superchannel into subchannels of any desired bandwidth and that the characteristics of the emission masks that would have to be applied to the interior edges of any such subchannels is completely at the discretion of the licensees joining to form the superchannel. This is analogous to the case of a single 6 MHz channel that is divided into subchannels, in which case only the outer edges of the emission mask used are specified by the rules and it is clear that the internal edges can follow whatever characteristic the licensee finds useful. The only constraint on this flexibility is that the requirement not to exceed the level of a uniform power spectral density must be met by the subdivided channels. The same should also apply to subdivided superchannels.

A further example is given in the NextLevel Comments in which it is proposed to use three 6 MHz channels operating as a superchannel to carry three 8 MHz signals, using whatever interference mitigation techniques the operator selects. This implies that the signals overlap by a total of 6 MHz in the 18 MHz superchannel. This leads to the possibility that the overlap regions could have higher total power levels than the regions with no overlap. In such a case, it would be necessary to be certain that the higher power overlap regions did not exceed the power spectral density permissible for a single channel occupying the same spectrum. Thus, either the total power would have to be reduced to keep the power in the overlap regions properly constrained, or the power in the overlap regions would have to be reduced so that the entire signal did not exceed the uniform power spectral density permitted in the channel.

Since the proposed rules may not make sufficiently clear that the subdivision of superchannels into subchannels and the application of the emission mask only to the external channel edges are both acceptable practices, Petitioners support NextLevel's request that the rules be clarified to specifically approve these techniques. The only cautionary note with respect to this request is that it must remain clear that the power in any overlap regions within a channel or superchannel must not exceed the power level permitted within that portion of the spectrum when a uniform power spectral density is maintained across the channel or superchannel.

H. The Commission Should Adopt Expedited Procedures For The Resolution Of Interference Complaints.

As the Petitioners have emphasized throughout this proceeding, one of the benefits of reducing routine staff review of uncontested applications is that it will free the staff to respond more

quickly to those cases where applications are contested or unanticipated interference occurs.[183/] Following those lines, the San Francisco/San Jose Consortium has proposed that the Commission employ procedures modeled on those proposed in the *Notice of Proposed Rulemaking* in *Preemption of State and Local Zoning and Land Use Restrictions On the Siting, Placement and Construction of Broadcast Station Transmission Facilities*,[184/] for resolving complaints of interference.[185/] The Petitioners endorse that proposal, with one modification.

Under the rules proposed in the *Tower Siting Notice*, a broadcaster has a relatively brief period of time after a local government denies permission to erect a tower in which to invoke either Commission review or alternative dispute resolution procedures, and the San Francisco/San Jose Consortium is proposing similar requirements here.[186/] In the context of tower siting, the proposed approach is certainly fair, since the governmental action adverse to the broadcaster presumably will only occur after some sort of a dialog between the government and the broadcaster. Here, however, the Petitioners believe that it would be counter-productive for the Commission to establish a time limit upon the bringing of interference complaints. The licensee of the affected receive site and the licensee of the response station hub are required under Sections 21.902(a) and 74.903(c) of the Commission's Rules to work together in good faith towards correcting any impermissible harmful electrical interference that does occur. The rules proposed by the San Francisco/San Jose

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[183/] *See* Petition, at 38; Petitioners Comments, at 20-21, 34.

[184/] FCC 97-296, MM Docket No. 97-182 (rel. Aug. 19, 1997)[hereinafter cited as the "*Tower Siting Notice*"]

[185/] *See* San Francisco/San Jose Consortium Comments, at 19-20.

[186/] Specifically, it is proposed that one suffering interference would have just 10 days to invoke alternative dispute resolution or just 30 days to seek Commission relief. *See id.* at 20.

Consortium provide scant time for this cooperative effort to occur, since the licensee suffering the suspected interference would be required to complain to the Commission almost immediately in order to protect its rights. The Petitioners believe that it is better not to impose any deadline on the filing of interference complaints, so as to allow the parties to work cooperatively towards a solution and only involve the Commission as a last resort. If a response station is causing impermissible harmful electrical interference, that interference should be cured no matter how long the parties take in their efforts to resolve interference concerns amicably without Commission intervention.

I. The Commission Should Reject The Proposal To Revise The Definition Of A Response Station Hub.

Based on a fundamentally mistaken view of the proposal advanced in the Petition and in the *NPRM*, Spike has suggested that the Commission amend the definition of "response station hub" contained in proposed Sections 21.2 and 74.901 of the Rules to provide that a hub can be employed "for the reception and/or retransmission of information transmitted by one or more [MDS or ITFS] response stations" (proposed additional language underscored).[187/]

As should be rather obvious, the potential issues associated with outbound point-to-multipoint transmissions from a specific booster station are fundamentally different from those associated with inbound multipoint-to-point transmissions from unlicensed response station to a specific response station hub. Thus, the Petition proposed rules under which an applicant for a booster station would be required to conduct a very different sort of interference analysis than an

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[187/] *See* Spike Comments, at 2-3.

applicant for a response station hub authorization.[188/] What Spike's proposal ignores is that if response station hubs can transmit, in addition to receive transmissions from response stations, a substantially different type of interference analysis will be required of applicants for hub authorizations.

Of course, the Petitioners anticipate that, although it will not always be the case, in many situations response stations will be transmitting to a hub collocated with a booster station or primary MDS/ITFS transmission facility. And therein lays the flaw in Spike's entire proposal – Spike's comments presume that response station hubs will have to be located at a different site than booster stations, requiring the use of multiple antennas at each response station.[189/]

Certainly, the Petitioners agree with Spike that in many cases it will be most economic to have outbound transmission facilities and inbound collection points collocated and sharing some common equipment. This not only reduces the cost of the network facilities, but permits the use of just one antenna in conjunction with the subscriber transceiver. The use of collocated outbound transmission facilities and inbound reception facilities, making possible a single antenna at subscriber premises, was discussed in some detail in "Rationale for Two-Way & Distributed Transmission Operations of Wireless Cable Systems," which was annexed to the Petition as Exhibit

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[188/] *Compare* proposed 21.913(b) (MDS signal booster interference analysis) with 21.909(c) (MDS response station hub interference requirements) and 74.985(b) (ITFS signal booster interference analysis) with 74.939(b) (ITFS response station hub interference requirements). *See NPRM*, Appendix C.

[189/] *See* Spike Comments, at 4 ("under [the Petitioners'] less flexible scheme, each response station site requires two antennas - one to transmit to the response station hub and another to receive transmissions from the separate booster station").

D.[190] Indeed, in the explanatory note to the proposed revisions to Section 21.909 (the MDS response station rule), the Petition clearly stated that "[i]t is envisioned that the Commission will permit response station hubs to be located at the wireless cable headend, at MDS booster stations, or at any other location."[191]

That the Petitioners were proposing collocation of outbound transmitters and response station hubs was hardly lost on the Commission, for the *NPRM* itself recognized that "response stations would be the means of transmission from a subscriber's premises and could be implemented as separate transmitters or as parts of a transverter (combined transmitter and receiver) and could use either separate transmitting antennas for return paths or combined transmitting/receiving antennas."[192] While the Petitioners would not object to revisions to the proposed definitions of MDS and ITFS response station hubs, primary stations and booster stations to make clear that outbound and inbound stations can share common equipment, there is nothing in the proposed rules that would prevent such sharing and, indeed, such sharing is implicit in the regulatory scheme advanced by the *NPRM*.

In short, adoption of Spike's proposed revision to the definition of "response station hub" would require a massive revision to the other rules to accommodate the ability of such hubs to transmit. The better course is to retain the existing distinction between transmitting primary and

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[190] *See* Weiss, "Rationale for Two-Way & Distributed Transmission Operations of Wireless Cable Systems," at 2-4 (Mar. 14, 1997).

[191] Petition, Appendix B, at 23.

[192] *NPRM*, at ¶ 11.

booster stations and receiving hubs, while making clear that transmission and reception facilities can be collocated and share common equipment.

J. The Commission Should Reject CTN's Suggestion That Low Power Booster Stations Be Denied Interference Protection.

Without even the slightest analysis or discussion, CTN offers in conclusory fashion that "booster stations with a maximum EIRP of -9 dBW should operate on a secondary basis only, and not be entitled to protection from harmful interference by main transmitters."[193/] The Petitioners strongly disagree. The arguments in support of affording protection to booster operations are set forth in full in the Petition, and need not be repeated here.[194/] Suffice it to say that if a facility is being used to provide service to wireless cable customers, it should be entitled to protection with respect to the power at which it operates.

III. CONCLUSION.

Almost a year ago, the 113 Petitioners commenced this proceeding with the submission of an innovative package of proposed rule changes designed to bring the MDS and ITFS regulatory environment in line with the needs of the 21st Century. Today, wireless cable stands at a precipice, with the future of many operators (and the support they afford the ITFS community) dependent upon the rules adopted in this proceeding. There can be no doubt that there is a substantial demand for

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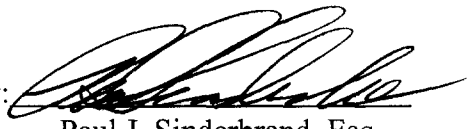
[193/] CTN Comments, at 23. CTN also erroneously contends that the proposed rules need to be amended to require applicants for booster stations to protect registered ITFS receive sites. *See id.* In fact, the proposed rules already assure that protection -- both proposed Section 21.913(b)(3) and proposed Section 74.985(b)(5) specifically provide that an applicant for a booster must demonstrate protection to all existing or previously-proposed ITFS and MDS stations within a specified distance of the proposed booster. *See NPRM*, at C-17, C 39-40.

[194/] *See* Petition, Exhibit B, at 33.

services that can only be offered through the deployment of advanced digital technologies in both the commercial and educational marketplaces – a demand that the wireless cable industry and its educational partners are uniquely situated to address. Whether or not they succeed in doing so will depend on a wide variety of factors, some of which are directly within the control of the Commission (such as the Commission addresses program access and inside wiring issues) and some of which are not (including, most importantly, whether the industry will be able to access capital markets that have largely been closed to the industry of late). The Commission must recognize, however, that many wireless cable operators will most certainly fail unless the rules adopted in this proceeding permit the rapid introduction of advanced digital technologies in a flexible manner that meets marketplace needs. Adoption of the rules proposed by the Petitioners here will not guarantee the success of the wireless cable industry, but rejection may sound the death knell for many long-standing industry participants.

Respectfully submitted,

By: 

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I, Joy M. Taylor, hereby certify that the foregoing Reply Comments were served this 9th day of February, 1997, by depositing a true copy thereof with the United States Postal Service, first-class postage prepaid, addressed to the following:

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